# Technical Memorandum No. 1

|  |  |  |  |
| --- | --- | --- | --- |
| TO: | Jeff Walker  Executive Administrator  P.O. Box 13231  Austin, TX 78711-3231 | DATE: | November 23, 2021  ***due to TWDB January 7, 2022*** |
|  |  |  |  |
| THROUGH:  FROM: | Chris Brown  Executive Director  Ark-Tex Council of Government  4808 Elizabeth Street  Texarkana, TX 75503  Halff Associates, Inc.  1201 North Bowser Road  Richardson, TX 75081 | PROJECT: | TWDB Contract No. 2101792501  Halff AVO 43790.001 |
| SUBJECT: | **Lower Red-Sulphur-Cypress Regional Flood Plan**  **Task 4C – Technical Memorandum No. 1** | | |

## Process Overview

In 2019, the Texas Legislature enacted Senate Bill 8 directing the creation of the first-ever State Flood Plan — to be prepared by the Texas Water Development Board (TWDB) and to follow a similar region-driven “bottom-up” approach that’s been used for water supply planning in Texas for more than 20 years. As outlined by the Texas Water Code, the purpose of the regional and state flood plans is to:

* Provide for orderly preparation for and response to flood conditions to protect against the loss of life and property;
* Guide state and local flood control policy; and
* Contribute to water development, where possible.

Early in the implementation process TWDB established 15 flood planning regions, based on river basin boundaries, and convened Regional Flood Panning Groups (RFPG) for each region. As depicted in Figure 1, draft Regional Flood Plans (RFP) are to be submitted to TWDB by August 1, 2022 and final adopted RFPs by January 10, 2023. The 15 RFPs will then be used to prepare the first Texas Flood Plan for adoption by TWDB by September 1, 2024. Subsequently, the RFPs and State Flood Plans will be updated on a five-year cycle.

Figure 1: Regional Flood Planning Timeline

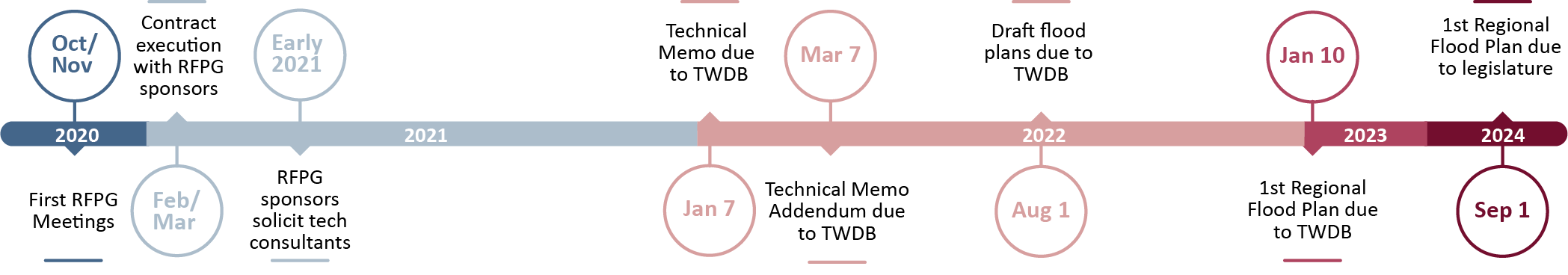


Figure 2 shows the delineation of the 15 flood planning regions, as well as the boundaries of the Lower Red-Sulphur-Cypress (Region 2) flood planning region. This region encompasses the Lower Red, Sulphur, and Cypress River Basins, with an approximate are of 9,188 square miles. Key attributes of the Lower Red-Sulphur-Cypress Flood Planning Region are presented in Figure 3.

Figure 2: Lower Red-Sulphur-Cypress Flood Planning Region

Map

Description automatically generated

Figure 3: Region 2 Quick Facts

Estimated Population (2020) = 531,000

20 Counties

9,188 square miles

22% of Region’s area within 1% annual chance flood event

Projected 24% population increase by 2050

70% of Cities Particiapte in NFIP

Manufacturing is largest industry by total revenue per county

Forestry is primary land cover

### Who is Preparing the Regional Flood Plans?

TWDB has established RFPGs for each region and has provided funding for preparation of the RFPs. RFPG responsibilities include directing the work of technical consultants, soliciting and considering public input, identifying specific flood risks, and identifying, evaluating, and recommending flood management studies, strategies, and projects to reduce flood risk. To ensure a diversity of perspectives are considered throughout the planning process, TWDB appointed RFPG members representing 11 stakeholder groups:

|  |  |  |
| --- | --- | --- |
| * Agriculture | * Industry | * Small Businesses |
| * Counties | * Municipalities | * Water Districts |
| * Electric Generation Utilities | * Public | * Water Utilities |
| * Environmental Interests | * River Authorities |  |

TWDB is administering the regional flood planning process through a contractual relationship with a sponsor selected by the RFPG. The Lower Red-Sulphur-Cypress region selected Ark-Tex Council of Governments (ATCOG) to serve as the RFPG’s sponsor. ATCOG provides administrative and logistical support for RFPG meetings and required public meetings, develops and manages the RFPG’s website, and administers a contract with the project technical consultant. The RFPG selected the Halff Associates Team as its technical consultant to assist with the preparation of the Lower Red-Sulphur-Cypress Regional Flood Plan.

### Regional Flood Planning Tasks

TWDB rules, scope of work, and technical guidelines for regional flood planning prescribes a process consisting of ten tasks as outlined in *Table 1*.

Table 1: Regional Flood Planning Tasks

|  |  |
| --- | --- |
| Task | Description |
| 1 | Planning Area Description |
| 2 | Existing and Future Condition Flood Risk Analysis |
| 3 | Floodplain Management Practices and Flood Mitigation and Floodplain Management Goals |
| 4 | Flood Mitigation Needs Analysis and Identification and Evaluation of Potential Flood Management Evaluations (FMEs), Potentially Feasible Flood Management Strategies (FMSs), and Flood Mitigation Projects (FMPs) |
| 5 | Recommendation of FMEs and FMSs and Associated FMPs |
| 6 | Impacts of Regional Flood Plan and Contributions to and Impacts on Water Supply Development and the State Water Plan |
| 7 | Flood Response Information and Activities |
| 8 | Administrative, Regulatory, and Legislative Recommendations |
| 9 | Flood Infrastructure Financing Analyses |
| 10 | Public Participation and Plan Adoption |

Tasks 1 through 4 comprise the initial discovery or data collection phase of regional flood planning, the conclusion of which is preparation this Technical Memorandum which was approved by the RFPG for submittal to TWDB on December 9, 2021. Per TWDB rules and guidelines, the Technical Memorandum is to be submitted to TWDB by January 7, 2022 and is to include:

* List of existing political subdivisions with flood-related authority/responsibility;
* List of previous flood studies and models considered relevant for the plan;
* Adopted flood mitigation and floodplain management goals;
* Documentation of the process to be used to identify potentially feasible FMSs and FMPs;
* List of potential FMEs and potentially feasible FMSs and FMPs;
* List of infeasible FMSs and FMPs with reason of exclusion; and
* Associated geospatial database

To accommodate the delayed release of critical floodplain information, the TWDB extended the deadline for completion and submittal of some elements of the Technical Memorandum to March 7, 2022. Table 6 includes details on which items are included in this Technical Memorandum 1 and which will be include din the Addendum.

## Status of Flood Planning for the Lower Red-Sulphur-Cypress Region

The following sections provide a summary of the current progress of the regional flood planning process through November 2021. This summary is further supplemented by information included in Attachments to this Technical Memorandum.

### Task 10 – Public Outreach and Engagement

The objective of this task is to address public participation, public meetings, administrative and technical support activities that are required to complete and submit a draft and final adopted Regional Flood Plan by January 10, 2023. A summary of public outreach and engagement activities undertaken to date follows:

#### Regional Flood Planning Group Meetings (2020 – 2021)

ATCOG as the project sponsor posts all meetings of the RFPG and its Executive Committee on the [Region 2 website](https://texasfloodregion2.org/) and on the Texas Secretary of State website, distributes agendas and meeting materials via email to all voting and non-voting RFPG members, as well as any person or entity who has requested notice of RFPG activities. Registration to receive such notifications is provided via the Region 2 website. All meetings of the RFPG to date have been convened virtually via the Zoom webinar platform or in a hybrid (virtual and in-person) format and are conducted pursuant to the Texas Open Meetings Act (Chapters 551 and 552, Government Code), Public Information Act, and COVID-related disaster proclamations issued by Governor Abbott. Table 2 provides a summary of the RFPG meetings held to date.

Table 2: Meeting Calendar

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Date | Meeting | Highlights |
| 2020 | October 30 | Planning Group Virtual Meeting | RFPG convening hosted by TWDB |
| 2021 | January 7 | Planning Group Virtual Meeting | ATCOG (sponsor) hosts |
| February 4 | Planning Group Virtual Meeting | Tech consultant selection process approved |
| March 4 | Planning Group Virtual Meeting | Added additional non-voting members |
| April 1 | Planning Group Hybrid Meeting | Consultant Interview and Selection |
| May 6 | Planning Group Virtual Meeting | First meeting with Technical Consultant |
| July 8A,B | Planning Group Hybrid Meeting | Pre-planning public comment |
| August 8A | Planning Group Hybrid Meeting | Pre-planning public comment and began discussion of Goals and Needs |
| September 2 | Planning Group Hybrid Meeting | Public comment taken on draft goals and draft process for identification and evaluation of potential studies and potentially feasible strategies and projects. |
| October 7 | Planning Group Hybrid Meeting | RFPG approves draft goals and process for identification and evaluation of potential studies and potentially feasible strategies and projects. |
| November 4 | Planning Group Hybrid Meeting | Discussed Tech Memo and use of additional funding |
| December 9 | Planning Group Hybrid Meeting | RFPG approves submittal of Technical Memorandum No. 1 |

*APre-Planning Public Input (July and August) – Public input regarding suggestions and recommendations as to issues, provisions, projects, and strategies that should be considered during the flood planning cycle and/or input on the development of the regional flood plan (as required per Texas Water Code §16.062(d) and 31 Texas Administrative Code §361.12(a)(4)).*

BJuly 8, 2021, meeting initiated a hybrid meeting format with the RFPG Chair and Sponsor organization meeting in a published physical location open to the public at various locations in northeast Texas, while continuing to offer the Zoom webinar option for voting members, non-voting members and public participants, in accordance with Texas Government Code §551.127.

#### Public Virtual, In-Person and Hybrid Meetings

As noted in Table 2, two hybrid pre-planning public input sessions were conducted during RFPG meetings in mid 2021. Depending on status of in-person group gatherings and COVID-19 best practice guidelines, ATCOG and the technical consultant will be planning and conducting required public meetings following adoption and submittal of the draft Regional Flood Plan (by August 1, 2022). It is anticipated at this time, that public meetings could be in-person and held in multiple locations within the region (e.g., upper, middle, and lower portions of the flood planning region).

#### Public Outreach Strategies and Tools

ATCOG established the required website in January 2021 under the domain name [www.texasfloodregion2.org](http://www.texasfloodregion2.org) using the Constant Contact hosting platform. The Halff Team created a cohesive visual identity for the basin. The website was also updated to provide more information and education materials about flood planning related topics. The website was updated to allow easy access for the public, with information about the planning process and updates on RFPG meetings. To complement the more in-depth information gathered by the data collection effort, the website provided a brief survey for site visitors to gain a broad understanding of regional goals and priorities.

As of December 1, 2021, over 400 subscribers have registered (on their own or by the consultant team) on the website to receive notifications and information pertaining to the regional planning activities. Table 3 provides additional website analytics.

Table 3: Website Analytics

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Total Visits | Unique Visitors | Page Views |
| June-July 2021 | 277 | 86 | 395 |
| June-November 2021 | 1,525 | 688 | 2,137 |

##### Direct Email Blasts

The RFPG uses Constant Contact to communicate to public and community stakeholders. An email contact list has been developed for a targeted audience that now has 419 contacts and includes the following tags:

|  |  |
| --- | --- |
| * Municipalities | * Subscribers through website |
| * Counties | * Chambers of Commerce |
| * County Judges | * Libraries |
| * Floodplain administrators | * NGOs |
| * Directors of development | * RFPG members |
| * Other Districts | * Halff technical consultant team |

Eleven email blasts have been sent to audiences between June – December 2021, with a click-to-open average rate of 25 percent. For perspective, a click-to-open average rate between 20-30 percent is generally considered a good response goal.

### Task 1 – Planning Area Description

TWDB requirements for Task 1, and the resultant Chapter 1 of the Regional Flood Plan, prescribe collection and presentation of a wide array of data and information about the Lower Red-Sulphur-Cypress region. This required information and associated draft Chapter 1 outline include:

**Attributes of the Lower Red-Sulphur-Cypress Region**

* Social and economic characteristics;
* Flood prone areas and flood risk to life and safety;
* Key historical flood events; and
* Political subdivisions with flood-related authority.

**Assessment of Existing Flood Infrastructure**

* + Natural features;
  + Structural flood infrastructure; and
  + Condition and functionality of existing flood infrastructure

**Proposed and Ongoing Flood Mitigation Activities**

* Current flood mitigation activities; and
* Projects under construction

The data and information collection requirements of Task 1 focus on identifying the nature of flood risk in the regions, flood mitigation and management practices, and projects that reduce flood risk without negatively affecting neighboring areas. Key elements included:

* Acquisition and review of available information from secondary sources, such as data available online from TWDB and other agencies (e.g., FEMA, Corps of Engineers), existing watershed models, FEMA Flood Insurance Maps and claims data, reports of previous investigations and studies, city and county flood hazard mitigation plans, and local ordinances related to floodplain management. Technical consultant team experience has also been incorporated.
* Information was also requested directly from key stakeholders (e.g., city and county floodplain administrators, emergency coordinators) and the public through an online survey. The *Region 2 Data Collection Survey Tool and Interactive Webmap* included over 90 questions, data upload requests, and interactive maps addressing the full array of topics and information relevant to regional flood planning. A copy of the survey questionnaire can be viewed on the [Region 2 website](http://www.texasfloodregion2.org). In addition to the online survey, the technical consultant team has and will continue to reach out directly to key stakeholders to acquire additional information and input and/or to clarify any questions about information on hand.

Responses to the survey include 25 percent of the region’s counties (5 counties), 27 percent of the region’s communities (23 communities), one river authority, 3 utility districts, and two councils of governments.

Task 1 is substantially complete. The results have been compiled and are presented in a draft of Chapter 1 of the RFP.

### Task 2 – Existing and Future Condition Flood Risk

While developing a comprehensive flood risk model of the region is beyond the scope of this planning effort, the TWDB “Floodplain Quilt” that is being used in the planning process is “sewn” together from various sources of data to provide comprehensive coverage of all known existing statewide flood hazard information. The Floodplain Quilt combines numerous data layers from FEMA, including effective floodplain maps, preliminary maps, base level elevation (BLE) maps, as well as data from other federal agencies. Information drawn from local and regional flood studies is being used to refine the region’s Floodplain Quilt “patches” derived from such sources.

Development of Task 2 – Flood Risk Analysis is contingent upon the incorporation of the TWDB provided cursory floodplain dataset, also referred to as the Fathom dataset. The TWDB recommends the use of the Fathom datasets to areas where no other data source has been identified or areas where flood hazard information is outdated or unreliable. The Fathom dataset was provided to the RFPG on October 29, 2021 and therefore has not been fully processed and assessed for incorporation into Technical Memorandum No. 1. Once the datasets are processed, the Floodplain Quilt will be reassembled using updated flood risk patches. As outlined in the TWDB Extension of Time to Complete Technical Memorandum (dated August 17, 2021) and associated Technical Memorandum Data Deliverable Clarification (dated October 29, 2021), the TWDB has extended the submittal deadline of these Task 2 items to March 7, 2022.

Region 2 intends to develop the floodplain quilt using the best available data based on the following prioritization:

1. Local Detailed Studies – Local detailed studies will be included only if they are city/county-wide studies completed to FEMA or TWDB standards. To date, no such studies have been provided that have not already been incorporated into FEMA Zone AE studies.
2. FEMA Zone AE Detailed Studies – These are limited to most of Grayson County and the larger municipalities in the area. Some cities, such as Sherman, Paris, and Texarkana have previously incorporated their own detailed studies.
3. FEMA Zone A Approximate Studies - Zone As make up most of the floodplain mapping that is available in the region.
4. Base Level Engineering (BLE) – Where available, BLE will be utilized. It is expected that, for this first round of the Regional Flood Plan, BLE will only be available in the Lower Red Basin. This will be used in counties with no current FEMA floodplain mapping or to extend the limits of the Zone A/AE floodplain.
   1. 0.2% AC Floodplain – Where available, the BLE 0.2% AC floodplain will be used where no 0.2% AC Zone X floodplain exists, which is most of the region.
5. Fathom Cursory Floodplain Dataset
   1. Fluvial - Fathom fluvial (riverine/channel flooding) data will be used where no FIRM or BLE data is available.
   2. Pluvial – Fathom pluvial (upland/urban flooding) data is being evaluated for use in supplementing all floodplain data to extend into upland areas (drainage areas less than one square mile) not traditionally covered by FEMA floodplain maps.

The methodology for assembling this quilt is under development now that both the BLE and Fathom became available in late October.

Future flood risks are only available in limited areas of the Region. In particular, Region 2 intends to use the current 0.2% AC (500-year) floodplain as the basis for future conditions 1% ACE floodplain in all locations where the 0.2% AC floodplain is available (whether from FEMA, Fathom, or other source); otherwise, the existing 1% AC floodplain will be utilized as the future 1% ACE. The Future 0.2% AC floodplain is mostly unavailable and will be identified as a data gap.

### Task 3 – Floodplain Management and Flood Mitigation Practices and Goals

Task 3 consists of two related parts: Task 3A – Evaluation and Recommendations on Floodplain Management Practices and Task 3B - Flood Mitigation and Floodplain Management Goals.

For Task 3A, TWDB requirements include:

* Assessment of current floodplain management and land use practices within the region;
* Consideration as to how the lack of, or insufficient, or ineffective floodplain management and land us practices may increase existing and future flood risk;
* Assessment of how future flood risk may change over time; and
* Consideration of recommendations for forward-looking floodplain management, land use, and economic development policies, practices, standards, and strategies that should be implemented by entities within the region.

Substantial progress has been made on Task 3A with a preliminary draft of Chapter 3 under review by the technical consultant team. This includes a substantially complete draft of TWDB-required Table 3 which provides an at-a-glance overview of the current state of National Flood Insurance Program participation by eligible entities within the region. Information about existing floodplain management practices in the Lower Red-Sulphur-Cypress region was also obtained through the *Region 2 Data Collection Survey Tool and Interactive Webmap* and from other sources. Refinements and additions to the Task 3A portion of Chapter 3 will be forthcoming as work on other related tasks is completed (e.g., Tasks 2A/B and 5).

Task 3B, also substantially complete and is included as *Attachment 3* to this Technical Memorandum. This table of goals was approved by the Lower Red-Sulphur-Cypress RFPG at its October 7, 2021 meeting. Again, it should be noted that refinements and additions to this portion of Chapter 3 will occur as work progresses on other related tasks. TWDB requires that the RFPG adopt specific and achievable short-term (10 years) and long-term (30 years) goals to guide the regional flood planning process. As adopted, most of the draft goals include specific quantifiable targets or performance measures. These may be revised as work on other related tasks progress, most importantly, the work to be performed under Task 5 - Recommendation of FMEs and FMSs and associated FMPs.

### Task 4 – Needs Analysis and Potential FMEs, FMSs, and FMPs

Task 4 consists of two related parts: Task 4A – Flood Mitigation Needs Analysis and Task 4B – Identification and Evaluation of Potential Flood Management Evaluations (FMEs), Potentially Feasible Flood Management Strategies (FMSs), and Flood Mitigation Projects (FMPs).

Task 4A includes the identification of locations that have the greatest flood mitigation and flood study needs by the evaluation of high flood risk or flood prone areas, areas lacking sufficient models or maps, historic flooding, and emergency needs. Task 4A also includes the initial collection and compilation of potential evaluations (FMEs), strategies (FMSs), and projects (FMPs) that will be further advanced through Task 4B and 5 activities as well as RFPG recommendations. Substantial progress has been made on Task 4A related to the initial collection of potential evaluations, studies, and projects. Completion of the Task 4A assessment of areas with the greatest risk and need is contingent upon substantial completion of the Task 2 existing and future flood risk analysis.

Task 4B includes the development of a screening process and initial screening-level evaluation of potential evaluations, studies, and projects identified in Task 4A. The approach developed for Task 4B was approved by the RFPG at the October 7, 2021 meeting and is included in Attachment 4. As of November 2021, flood related studies and plans have been collected, compiled, and initially screened utilizing 19 previous floodplain studies, 14 hazard mitigation plans, three drainage master plans, one flood protection study, and four mitigation or capital improvement studies. Substantial progress has been made on Task 4A related to potentially feasible evaluations, studies, and projects. Substantial completion of draft Chapter 4 is projected by February 2022.

**Look-Ahead – Process for August 2022 Draft Regional Flood Plan**

The submittal of Technical Memorandum No. 1 marks the conclusion of the data collection phase of the regional flood planning process. However, as noted previously, the substantial completion of Tasks 2A/B and 4A/B are underway and will be documented in the Technical Memorandum Addendum and submitted to TWDB by March 7, 2022. In terms of the schedule for the plan development phase of the process, the driver is the requirement for the RFPG to adopt and submit an initial draft Regional Flood Plan to TWDB by August 1, 2022. Table 4 below presents an overview of the projected work to be completed and the general sequence of actions the RFPG will encounter during this next phase of the process.

Table 4: Projected Progress by Task

| Task / Description | | Progress as of November 22, 2021 | Projected Progress |
| --- | --- | --- | --- |
| Task 1 | Planning Area Description | Substantially complete – The draft Chapter 1 has been provided to the RFPG and public for review and comment. | The content of draft Chapter 1 will be subject to further refinement, as appropriate, based on comments and suggestions received from the RFPG and the public as well as advancements in the planning process particularly related to refined flood risk information (Task 2). |
| Task 2A | Existing Condition Flood Risk | Partially complete – Floodplain Quilt patches have been generated using collected and researched information. | The Fathom datasets are being processed to generate additional flood risk patches. Substantial completion is projected by February 2022 with approval by the RFPG to submit to TWDB by March 7, 2022. |
| Task 2B | Future Condition Flood Risk | Partially complete – Future condition Floodplain Quilt patches have been generated using collected and researched information in addition to the coordination of estimation methodologies with other consultants and regions. | Along with Task 2A, substantial completion is projected by February 2022 with approval by the RFPG to submit to TWDB by March 7, 2022. |
| Task 3A | Floodplain Management Practices | Substantially complete – The draft Task 3A table will be provided to the RFPG and public for review and comment. | The content of draft Chapter 3 will be subject to further refinement, as appropriate, based on comments and suggestions received from the RFPG and the public as well as advancements in the planning process. |
| Task 3B | Mitigation & Management Goals | Substantially complete – The draft goal statements have been provided to the RFPG and public for review and comment and were subsequently adopted by the RFPG. | Quantitative short- and long-term performance metrics may be refined and incorporated into draft Chapter 3 as the planning process advances, particularly with substantial completion of Task 5 – Recommendation of FMEs, FMSs, and FMPs. |
| Task 4A | Needs Analysis | Partially complete – An initial listing of potential FMEs, FMPs, and FMSs have been generated using collected and researched information. | The content of draft Chapter 4 will be refined as the planning process advances particularly with refined flood risk information (Task 2) to identify areas of greatest flood risk and need for mitigation. |
| Task 4B | Identify FMEs, FMSs, and FMPs | Partially complete – The draft identification and evaluation process has been provided to the RFPG and public for review and comment and was subsequently approved by the RFPG. | Substantial completion of draft Chapter 4 tables and geospatial files is projected by February 2022 with approval by the RFPG to submit to TWDB by March 7, 2022. |
| Task 4C | Technical Memorandum | Partially complete – The draft Technical Memorandum No. 1 has been provided to the RFPG and public for review and comment. | Seeking RFPG approval on December 9, 2021 for submittal of Technical Memorandum No. 1 to TWDB by January 7, 2022. Substantial completion of draft the Technical Memorandum Addendum is projected by February 2022 with approval by the RFPG to submit to TWDB by March 7, 2022. |
| Task 5 | Evaluate / Recommend FMEs, FMSs, and FMPs | Initial stages – Will advance data collection and refinement of FMEs, FMSs, and FMPs | Substantial completion of evaluations necessary to support RFPG recommendations are projected by March 2022. Substantial completion of draft recommendations and Chapter 5 are projected by May 2022 with approval by the RFPG to submit to TWDB by August 1, 2022. |
| Task 6A | Impacts of Regional Plan | Not yet initiated – requires substantial completion of Task 5 – Recommendation of FMEs, FMSs, and FMPs. | Substantial completion of Chapter 6 is projected by May 2022 with approval by the RFPG to incorporate into the draft RFP for submittal to TWDB by August 1, 2022. |
| Task 6B | Contribution / Impacts of Water Supply | Not yet initiated – requires substantial completion of Task 5 – Recommendation of FMEs, FMSs, and associated FMPs. | Substantial completion of Chapter 6 is projected by May 2022 with approval by the RFPG to submit to TWDB by August 1, 2022. |
| Task 7 | Flood Response Information & Activities | Not yet initiated – Data collection and assessment anticipated to commence in January 2022. | Substantial completion of Chapter 7 is projected by May 2022 with approval by the RFPG to submit to TWDB by August 1, 2022. |
| Task 8 | Admin, Regulatory & Legislative Recommendations | Initial stages – continue to refine list of policy issues of interest based on comments and suggestions received from the RFPG and the public. | Substantial completion of Chapter 8 is projected by May 2022 with approval by the RFPG to submit to TWDB by August 1, 2022. |
| Task 9 | Flood Infrastructure Finance | Not yet initiated – Data collection and assessment anticipated to commence in March 2022. | Substantial completion of Chapter 9 is projected by May 2022 with approval by the RFPG to submit to TWDB by August 1, 2022. |
| Task 10 | Public Involvement & Plan Adoption | Ongoing – Continued public and stakeholder outreach and engagement. | Compilation of draft Chapters 1-9 into an initial draft Regional Flood Plan will be subject to further refinement, as appropriate, based on comments and suggestions received from the RFPG and the public as well as advancement of the planning process. Substantial completion of initial draft Regional Flood Plan is projected by June 2022 with approval by the RFPG in July 2022 and submittal to TWDB by August 1, 2022. |

## Task 4C – Technical Memorandum No. 1 Deliverables

The following sections introduce the required Technical Memorandum No. 1 deliverables for the initial phase of the regional flood planning process for the Lower Red-Sulphur-Cypress region.

#### 4C.1a – List of existing political subdivisions with flood-related authority/responsibility

TWDB provided a list of 148 political subdivisions, or entities, that were thought to have some degree of flood-related authority in the region. It is important to note that in the broadest sense, “authority” could be any public entity/agency that plans, regulates, constructs, or maintains flood and/or drainage infrastructure. In a more narrow sense, “authority” would only include entities with the authority to enact and enforce floodplain regulations (e.g., municipalities, counties, and river authorities). *Table 5* below provides a summary of the entity types within the region. A complete list of entities is provided in *Attachment 1*.

Table 5: Political Subdivisions with Potential Flood-Related Authority

|  |  |  |
| --- | --- | --- |
| Entity Types | Number of Entities | NFIP Participants |
| Municipality | 86 | 60 |
| County | 20 | 16 |
| Council of Governments | 4 | N/A |
| River Authority | 3 | N/A |
| Water Districts | 3 | N/A |
| Water Supply & Utility Districts (MUDs, FWSDs, MWDs, SUDs) | 17 | N/A |
| Flood Control Entities (WCIDs, LIDs) | 10 | N/A |
| Other | 5 | N/A |

*Source: TWDB Data Hub*

Input from representatives from each political subdivision in the region has been solicited in an effort to obtain needed information for each entity. Approximately 23 percent of the entities with potential flood related authority, provided at least some measure of response at varying levels of detail in the flood planning process via the *Region 2 Data Collection Survey Tool and Interactive Webmap*. A list of existing floodplain management practices was compiled using collected and researched information as displayed in *Attachment 1*.

Geospatial files for political subdivisions with flood-related authority are provided *Attachment 7*. The geodatabase feature classes titled ‘Entities’ and ‘ExFpMP’ provide a spatial representation of existing political subdivisions with flood-related authorities or responsibilities.

#### 4C.1b and 4C.1f – List of previous flood studies and models relevant to plan development

A list of previous studies has been compiled using collected and researched information and is presented in *Attachment 2.* The previous flood studies and associated models included on the list are those that are being used to refine the region’s Floodplain Quilt and/or studies that are being used to identify/validate potential evaluations, strategies, and/or projects. In addition to provided studies via the *Region 2 Data Collection Survey Tool and Interactive Webmap*, the previous studies were collected through the online searches and consultant team experience in the region. Study reports and communication with study sponsors reveal whether hydrologic and hydraulic models are avaliable or presumed avaliable. As the planning process continues the list of previous studies will be enhanced to document all available sources of information relevant to flood plan development within the Lower Red-Sulphur-Cypress region.

#### 4C.1c, 4C.1d, and 4C.1e – Lists, maps, and geodatabase of existing and future flood risk and gaps

Development of Task 4C.1c-e deliverables is contingent upon full processing of the TWDB provided cursory floodplain dataset, also referred to as the Fathom dataset. The Fathom dataset was provided to the RFPG on October 29, 2021 and therefore has not been fully processed and assessed to incorporate results into Technical Memorandum No. 1. As outlined in the TWDB Extension of Time to Complete Technical Memorandum (dated August 17, 2021) and associated Technical Memorandum Data Deliverable Clarification (dated October 29, 2021), the TWDB has extended the submittal deadline of these items to March 7, 2022.

#### 4C.1g – Flood mitigation and floodplain management goals adopted by the RFPG

One of the critical components of the inaugural regional and state flood planning process is the development of flood mitigation and floodplain management goals. The Lower Red-Sulphur-Cypress RFPG has spent a significant amount of time exploring values and discussing what they felt were the suitable goals for their region. *Attachment 3* presents the adopted draft flood mitigation and floodplain management goals for the Lower Red-Sulphur-Cypress Region. The associated geospatial table titled ‘Goals’ is included in the geodatabase located in *Attachment 7*.

As set out in the Guidance Principles in 31 TAC §362.3, the overarching intent of the region’s goals must be “to protect against the loss of life and property.” This is further defined to:

1. Identify and reduce the risk and impact to life and property that already exists, and
2. Avoid increasing or creating new flood risk by addressing future development within the areas known to have existing or future flood risk.

The goals, when implemented, must demonstrate progress towards the overarching goal set forth by the state. As part of the goal setting process, the RFPG adopted goals covering six focus areas. These focus areas were defined to create a one-to-one connection with the Flood Management Strategy (FMS) types as outlined in TWDB’s Exhibit D: Data Submittal Guidelines for Regional Flood Planning.

The adopted goals will guide the development of the strategies (FMSs), evaluations (FMEs), and projects (FMPs) for the Lower Red-Sulphur-Cypress region. They build upon TWDB regional flood planning guidance and provide a comprehensive framework for future strategy development focused on reducing flood risk to people and property, while not negatively affecting neighboring areas.

The six goal focus areas include:

|  |  |
| --- | --- |
| 1. Flood Education and Outreach | 1. Flood Prevention |
| 1. Flood Warning and Readiness | 1. Non-Structural Flood Infrastructure Projects |
| 1. Flood Studies and Analysis | 1. Structural Flood Infrastructure Projects |

Per Texas Water Development Board (TWDB) requirements and guidelines, the goals adopted by the RFPG must be specific and achievable and include the information listed below:

* Description of the goal
* Term of the goal set at 10 years (short-term) and 30 years (long-term)
* Extent or geographic area to which the goal applies
* Residual risk that remains after the goal is met
* Measurement method that will be used to measure goal attainment
* Association with overarching goal focus areas

Quantitative short- and long-term performance metrics were adopted by the RFPG for incorporation in Chapter 3 but may be revised as the planning process progresses, particularly related to substantial completion of Task 5 – Recommendation of FMEs, FMSs, and FMPs.

#### 4C.1h – Process to identify potentially feasible FMSs and FMPs

TWDB requirements for Task 4B state that each RFPG is to develop and receive public comment on a “…proposed process to be used by the RFPG to identify and select flood management evaluations, flood mitigation strategies, and flood mitigation projects.” The proposed process was designed to conform with TWDB requirements as expressed in rules, scope of work, and technical guidelines for regional flood planning.

The proposed process for screening, evaluation, and recommendation of potential evaluations (FMEs), strategies (FMSs), and projects (FMPs) was introduced during the September 2, 2021 RFPG meeting. Subsequently, at the October 7, 2021 meeting, the RFPG reviewed and discussed the proposed process, accepted public comment, and approved the proposed process as provided in *Attachment 4*.

#### 4C.1i – List of potential FMEs and potentially feasible FMSs and FMPs

The TWDB scope of work and technical guidelines state that Task 4 activities include initial collection and assessment of potential evaluations (FMEs), strategies (FMSs), and projects (FMPs) that will be further advanced through Task 5 activities and RFPG recommendations. The FMEs, FMSs, and FMPs included with this Technical Memorandum in Attachment 5 are preliminary and subject to further refinement based on comments and suggestions received from the RFPG and the public as well as advancements in the planning process, particularly through Task 5.

#### 4C.1j – List of FMSs and FMPs that were determined infeasible

No FMSs or FMPs have been determined to be infeasible at this time. This determination will primarily be performed under Task 5.

#### 4C – Technical Memorandum No. 1 Geodatabase

As outlined in the TWDB Extension of Time to Complete Technical Memorandum dated August 17, 2021 and associated Technical Memorandum Data Deliverable Clarification dated October 29, 2021, the following table outlines geodatabase deliverables included with this Technical Memorandum. Specific data deliverables and formatting are in alignment with the TWDB’s Exhibit D: Data Submittal Guidelines for Regional Flood Planning. The digital geodatabase is located in *Attachment 7*.

Table 6: Task 4C Geodatabase

| File No. | Item Name | Description | Submittal Milestone | Feature Class Name | Submittal Deadline Notes |
| --- | --- | --- | --- | --- | --- |
| 1 | Entities | Entities with flood-related authority and whether they are actively engaged in flood planning, floodplain management, and flood mitigation activities. | Technical Memo  (limited fields) | Entities | Submit on January 7, 2022. |
| 2 | Watersheds | The spatial layer for watersheds with associated FME, FMS, and FMPs. | Technical Memo | Watersheds | Submit initial data on January 7, 2022 with limited fields as these will be refined as FMEs, FMSs, and FMPs are advanced. |
| 3 | Existing Infrastructure | A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the FPR. | Technical Memo | ExFldInfraPol | Submit on January 7, 2022. |
| 4 | Technical Memo | ExFldInfraLn | Submit on January 7, 2022. |
| 5 | Technical Memo | ExFldInfraPt | Submit on January 7, 2022. |
| 6 | Proposed or Ongoing Flood Mitigation Projects | Proposed or ongoing flood mitigation projects currently under construction, being implemented; and with dedicated funding to construct and the expected year of completion. | Technical Memo | ExFldProjs | Submit on January 7, 2022. |
| 7\* | Existing Flood Hazard | Perform existing condition flood hazard analyses to determine the location and magnitude of both 1.0% annual chance and 0.2% annual chance flood events. | Technical Memo | ExFldHazard | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 8\* | Flood Mapping Gaps | Gaps in inundation boundary mapping. | Technical Memo | Fld\_Map\_Gaps | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 9\* | Existing Exposure | Develop high-level, region- wide, and largely GIS-based existing condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, both 1.0% annual chance and 0.2% annual chance flood events. | Technical Memo | ExFldExpPol | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 10\* | Technical Memo | ExFldExpLn | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 11\* | Technical Memo | ExFldExpPt | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 12\* | Combines the Exposure Poly, Line, and Point data into a single master layer, also includes Vulnerability data. | Technical Memo | ExFldExpAll | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 13\* | Future Flood Hazard | Perform future condition flood hazard analyses to determine the location and magnitude of both 1.0% annual chance and 0.2% annual chance flood events. | Technical Memo | FutFldHazard | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 14\* | Future Exposure | Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, both 1.0% annual chance and 0.2% annual chance flood events. | Technical Memo | FutFldExpPol | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 15\* | Technical Memo | FutFldExpLn | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 16\* | Technical Memo | FutFldExpPt | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 17\* | Combines the Exposure Poly, Line, and Point data into a single master layer, also includes Vulnerability data. | Technical Memo | FutFldExpAll | Submit on March 7, 2022 along with Technical Memorandum Addendum. |
| 18 | Existing Floodplain Management Practices | Identify areas with existing floodplain management practices, identify common and compare contrasting practices within the region, and acknowledge locations that may lack floodplain management. | Technical Memo | ExFpMP | Submit on January 7, 2022. |
| 19 | Goals | Identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals. | Technical Memo  (limited fields) | Goals | Submit on January 7, 2022. |
| 20 | Streams | Shows the streams to be studied by FMEs, and those relevant to FMS and FMPs, when applicable. | Technical Memo | Streams | Submit on January 7, 2022. |
| 21 | Flood Management Evaluations | Flood Management Evaluations will identify areas requiring flood risk evaluation. | Technical Memo  (limited fields) | FME | Submit initial data on January 7, 2022 with limited fields as these will be refined as the planning process advances. |
| 22 | Flood Mitigation Projects | Flood Mitigation Projects reduce flood risk through a variety of approaches. The service area is the region impacted by the project. | Technical Memo  (limited fields) | FMP | Submit initial data on January 7, 2022 with limited fields as these will be refined as the planning process advances. |
| 23\* | Post-project Hazard | Project specific features showing an updated hazard area that accounts for the impact of the project. | Draft Plan | FMP\_HazPost | Not required in Tech Memo, so will be a deliverable on August 1, 2022. |
| 24\* | Project Details | A table included in the .gdb but built using the Project Details excel template. The table includes more detailed analysis of the project. | Draft Plan | FMP\_Details | Not required in Tech Memo, so will be a deliverable on August 1, 2022. |
| 25 | Flood Management Strategies | Flood Management Strategies can be a broad array of policy or other strategies that aid in flood management. | Technical Memo  (limited fields) | FMS | Submit initial data on January 7, 2022 with limited fields as these will be refined as the planning process advances. |

*\*These features are not included in this Technical Memorandum No. 1 deliverables.*

# Technical Memorandum Attachments

1. 4C.1a – List of existing political subdivisions with flood-related authority/responsibility
2. 4C.1b, 4C.1e, and 4C.1f – List of previous flood studies and models relevant to plan development
3. 4C.1g – Flood mitigation and floodplain management goals adopted by the RFPG
4. 4C.1h – Process to identify potentially feasible FMSs and FMPs
5. 4C.1i – List of potential FMEs and potentially feasible FMSs and FMPs
6. 4C.1j – List of FMSs and FMPs that were determined infeasible
7. 4C – Geodatabase

# Attachment 1

Task 4C.1a – List of existing political subdivisions

with flood-related authority/responsibility

# Attachment 2

Task 4C.1b, 4C.1e and 4C.1f – List of previous flood studies

and models relevant to plan development

# Attachment 3

Task 4C.1g – Flood mitigation and floodplain

management goals adopted by the RFPG

# Attachment 4

Task 4C.1h – Process to identify potentially

feasible FMSs and FMPs

# Attachment 5

Task 4C.1i – List of potential FMEs and

potentially feasible FMSs and FMPs

# Attachment 6

Task 4C.1j – List of FMSs and FMPs

that were determined infeasible

# Attachment 7

Task 4C – Geodatabase

*(provided in digital format only)*